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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,463	03/18/2004	Robert Gerlach	2918.RGER.NP	7225

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EXAMINER	
DUNN, DANIELLE N	
ART UNIT	**PAPER NUMBER**
2875	

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08/01/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/804,463	GERLACH, ROBERT	
	Examiner	Art Unit	
	Danielle Dunn	2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/21/2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34 and 48-53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34 and 48-53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 June 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on 6/21/2007 has been entered. Claims 1, 27-29 and 31-35 have been amended. Claims 35-47 have been cancelled. Claims 48-53 have been added. Claims 1-34 and 48-53 are still pending in this application, with claim 1 being independent.

Election/Restrictions

2. Claims 36-47 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 6/21/2007.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 1, 2, and 20-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Muthu et al. (US 6,441,558) and further in view of Turnbull et al. (US 5,803,579) and Amerson et al. (US 6,379,022).

a. In regards to **claim 1**, Muthu et al. teach an LED array formed of a plurality of LEDs (Fig. 1, items 22, 24, and 28), with each LED or group of identically colored LEDs. Muthu et al. also teaches that the LED array is used for spotlights/floodlights (Fig. 1).

b. Muthu et al. do not teach the array having overall luminance sufficient to illuminate an object from a distance of at least 24 inches or that the visible spectrum is 400 to 750nm.

c. Turnbull et al. teach the visible spectrum of light is from 380nm to 780nm (Column 6, lines 22-25).

d. Amerson et al. teach using an array of four distinct colors (Column 2, lines 66-67). The Examiner notes that using an array of four colors creates white light. Adding a fifth color to this array will generate a better white light. Likewise, increasing the amount of distinctly colored narrowband colors in the array will generate an even better white light.

e. In regards to **claim 2**, Muthu et al. teach each LED or group of identically colored LEDs within the LED array is configured for independent control (Fig. 1 and 4).

f. In regards to **claims 20-23**, Muthu et al. teach the plurality of LEDs number less than or equal to 100, 64, 36 and 16 LEDs (Fig. 1)

g. Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use the structure of the white LED luminary light control system of Muthu et al. in combination with any diodes within the visual spectrum as noted by Turnbull et al. It also would have been obvious to one of ordinary skill in the art at the time the invention was made to increase the number of uniquely colored LED's or group of identically colored LED's from four to five or more in order to create a brighter white light than that of what is/was created with four or less groups of uniquely colored LED's or group of identically colored LED's as noted by Amerson et al., since it has been held that a mere duplication of essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v Bemis Co., 193 USPQ 8.

5. **Claims 3-5** are rejected under 35 U.S.C. 103(a) as being unpatentable over Muthu et al. (US 6,441,558), Turnbull et al. (US 5,803,579), and Amerson et al. (US 6,379,022) as applied to claim 1 above, and further in view of LEDTRONICS, Inc. (http://web.archive.org/web/20021015160056/http://www.ledtronics.com/datasheets/Pages/general_information/100-02a.htm).

h. In regards to **claims 3-5**, Muthu et al., Turnbull et al., and Amerson et al. teach an LED array formed of a plurality of LEDs comprising wavelengths in the

visible spectrum having the overall luminance sufficient to illuminate an object from a distance of at least 24 inches.

i. Muthu et al., Turnbull et al., and Amerson et al. do not teach that the LEDs produces colored light with a spectral half-width of less than about 60nm, 40nm, or 30nm.

j. LEDTRONICS, Inc. teach LEDs that produce colored light with a spectral half-width of about 90nm, 65nm, 60nm, 50nm, 45nm, 35nm, 30nm, and 20nm.

k. Therefore it would have been obvious at the time the invention was made to use the array of LEDs of Muthu et al. within the visible spectrum as noted by Turnbull et al. in combination with the LEDs from LEDTRONICS, Inc. to illuminate an object because this would allow for greater illumination of objects.

6. **Claims 6, 7, 9, 10, 12, 13, and 15-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Muthu et al. (US 6,441,558), Turnbull et al. (US 5,803,579), and Amerson et al. (US 6,379,022), as applied to claim 1 above, and further in view of LEDTRONICS, Inc. (http://web.archive.org/web/20020927061148/http://www.ledtronics.com/datasheets/Pages/led_color_chart/38.htm)

l. Muthu et al., Turnbull et al., and Amerson et al. teach an LED array formed of a plurality of LEDs comprising wavelengths in the visible spectrum having the overall luminance sufficient to illuminate an object from a distance of at least 24 inches.

m. In regards to **claims 6, 9, and 12**, Muthu et al., Turnbull et al., and Amerson et al. do not teach specified colors within 25nm of associated dominant wavelengths.

n. LEDTRONICS, Inc. teaches the following specified colors within 25nm of an associated dominant wavelength violet 425 nm **(ultra violet 405nm),** blue 465 nm **(super blue 470nm),** cyan 500 nm **(blue green 505nm)**, green 530 nm **(aqua green 525nm),** lime 555 nm **(pure green 555nm),** amber 580 nm **(super lime yellow 574nm)**, orange 610 nm **(super orange 612nm),** red 650 nm **(ultra red 660nm)**, violet 405 nm **(ultra violet 405nm),** indigo 445 nm **(ultra blue 430nm)**, blue 480 nm **(super blue 470nm),** cyan 510 nm **(aqua green 525nm),** green 535 nm **(pure green 555nm),** lime 555 nm **(super pure green 560nm),** yellow-amber 575 nm **(super lime yellow 574nm),** orange 600 nm **(orange 605nm)**, orange-red 630 nm **(super red 633nm),** deep red 665 nm **(ultra red 660nm)**, violet 410 nm **(ultra violet 405nm)**, indigo 445nm **(ultra blue 430nm),** blue 475 nm **(super blue 470nm),** cyan 500 nm **(blue green 505nm),** aqua 520 nm **(aqua green 525nm)**, green 540 nm **(pure green 555nm)**, lime 555 nm **(super pure green 560nm),** yellow 570 nm **(yellow 585nm),** amber 590 nm **(super yellow 595nm),** orange 610 nm **(super orange 612nm),** red-orange 635 nm **(high eff. red 635nm)** and deep red 665 nm **(ultra red 660nm).**

o. In regards to **claims 7, 10, and 13**, Muthu et al., Turnbull et al., and Amerson et al. do not teach specified colors within 15nm of associated dominant wavelengths.

p. LEDTRONICS, Inc. teaches the following specified colors within 15nm of an associated dominant wavelength: violet 425 nm **(ultra blue 430nm)**, blue 465 nm **(super blue 470nm),** cyan 500 nm **(blue green 505nm),** green 530 nm **(aqua green 525nm),** lime 555 nm **(pure green 555nm),** amber 580 nm **(yellow 585nm)**, orange 610 nm **(super orange 612nm),** red 650 nm **(ultra red 660nm)**, violet 405 nm **(ultra blue 405nm)**, indigo 445 nm **(ultra blue 430nm)**, blue 480 nm **(super blue 470nm)**, cyan 510 nm **(blue green 505nm)**, green 535 nm **(aqua green 525nm)**, lime 555 nm **(super pure green 560nm)**, yellow-amber 575 nm **(super lime yellow 574nm)**, orange 600 nm **(super yellow 595nm)**, orange-red 630 nm **(super red 633nm)**, deep red 665 nm **(ultra red 660nm)**, violet 410 nm **(ultra violet 395nm)**, indigo 445nm **(ultra blue 430nm)**, blue 475 nm **(super blue 470nm)**, cyan 500 nm **(blue green 505nm)**, aqua 520 nm **(aqua green 525nm)**, green 540 nm **(pure green 555nm)**, lime 555 nm **(super pure green 560nm)**, yellow 570 nm **(super lime yellow 574nm)**, amber 590 nm **(super yellow 595nm)**, orange 610 nm **(super orange 620nm)**, red-orange 635 nm **(high eff. red 635nm)** and deep red 665 nm **(ultra red 660nm).**

q. In regards to **claims 15-17**, Muthu et al., Turnbull et al., and Amerson et al. do not teach each dominant wavelength being separated from its nearest neighbor on either side by not more than about 40nm, 30nm, or 20nm.

r. LEDTRONICS, Inc. teaches each dominant wavelength being separated from its nearest neighbor on either side by not more than about 40nm, 30nm or 20nm.

s. In regards to **claim 18**, LEDTRONICS, Inc. teaches the dominant wavelengths gradually increasing away from either side of approximately 555nm.

t. In regards to **claim 19**, LEDTRONICS, Inc. teaches LEDs with a dominant wavelength in the near ultra-violet region.

u. Therefore it would have been obvious at the time the invention was made to use the array of LEDs of Muthu et al. within the visible spectrum as noted by Turnbull et al. in combination with the LEDs from LEDTRONICS, Inc. to illuminate an object because this would allow one to create multicolored light from various LED colors.

7. **Claims 8, 11, and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Muthu et al. (US 6,441,558), Turnbull et al. (US 5,803,579), Amerson et al. (US 6,379,022) and LEDTRONICS, Inc.

(http://web.archive.org/web/20020927061148/http://www.ledtronics.com/datasheets/Pages/led_color_chart/38.htm), as applied to claim 1 above, and further in view of The LED Museum (http://web.archive.org/web/20030201225626/http://ledmuseum.home.att.net/ledleft.htm)

v. Muthu et al., Turnbull et al., and Amerson et al. teach an LED array formed of a plurality of LEDs comprising wavelengths in the visible spectrum having the overall luminance sufficient to illuminate an object from a distance of at least 24 inches.

w. In regards to **claims 8, 11, and 14**, Muthu et al., Turnbull et al., and Amerson et al. do not teach specified colors within 25nm of associated dominant wavelengths.

x. LEDTRONICS, Inc. teaches the following specified colors within 5nm of an associated dominant wavelength: violet 425 nm **(ultra blue 430nm)**; blue 465 nm **(super blue 470nm),** cyan 500 nm **(blue green 505nm),** green 530 nm **(aqua green 525nm),** lime 555 nm **(pure green 555nm),** amber 580 nm **(yellow 585nm)**, orange 610 nm **(super orange 612nm),** violet 405 nm **(ultra blue 405nm)**, cyan 510 nm **(blue green 505nm)**, green 535 nm **(aqua green 525nm)**, lime 555 nm **(super pure green 560nm)**, yellow-amber 575 nm **(super lime yellow 574nm)**, orange 600 nm **(super yellow 595nm)**, orange-red 630 nm **(super red 633nm)**, deep red 665 nm **(ultra red 660nm)**, violet 410 nm **(ultra violet 405nm)**, blue 475 nm **(super blue 470nm)**, cyan 500 nm **(blue green**

505nm), aqua 520 nm **(aqua green 525nm)**, lime 555 nm **(super pure green 560nm)**, yellow 570 nm **(super lime yellow 574nm)**, amber 590 nm **(super yellow 595nm)**, orange 610 nm **(super orange 612nm)**, red-orange 635 nm **(high eff. red 635nm)** and deep red 665 nm **(ultra red 660nm).**

y. The LED Museum teaches the following specified colors within 5nm of an associated dominant wavelength: red 650 nm **(pure bright red 645nm)**, indigo 445 nm **(deep blue/violet blue 444nm)**, blue 480 nm **(blue, slightly greenish-tinted azure blue 475nm)**, indigo 445nm **(deep blue/violet blue 444nm)**, green 540 nm **(no color seen, but within green wavelength 540nm)**.

z. Therefore it would have been obvious at the time the invention was made to use the array of LEDs of Muthu et al. within the visible spectrum as noted by Turnbull et al. in combination with the LEDs from LEDTRONICS, Inc. and The LED Museum to illuminate an object because this would allow one to create multicolored light from various LED colors.

8. **Claims 24-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Muthu et al. (US 6,441,558), Turnbull et al. (US 5,803,579), and Amerson et al. (US 6,379,022) as applied to claim 1 above.

aa. In regards to **claims 24-26**, Muthu et al., Turnbull et al., and Amerson et al. teach an LED array formed of a plurality of LEDs comprising wavelengths in the visible spectrum having the overall luminance sufficient to illuminate an object from a distance of at least 24 inches.

bb. Muthu et al., Turnbull et al., and Amerson et al. do not teach the amount of power that each of the plurality of LEDs comprise.

cc. It would have been obvious to one skilled in the art at the time the invention was made to perform testing to acquire the optimal Wattage values because this would ensure that the LEDs would not overheat, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980).

9. **Claims 30-34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Muthu et al. (US 6,441,558), Turnbull et al. (US 5,803,579), and Amerson et al. (US 6,379,022), as applied to claim 1 above, and further in view of LEDTRONICS, Inc. (http://www.ledtronics.com/datasheets/Pages/chromaticity/097b.htm).

dd. In regards to **claim 30**, Muthu et al., Turnbull et al., and Amerson et al. teach all the limitations as disclosed above.

ee. Muthu et al., Turnbull et al., and Amerson et al. do not teach the relative luminance values for all LEDs within the LED array operating at full brightness levels resulting in a composite white-type light that may be plotted on a CIE Chromaticity diagram within McAdam ellipses that are on or adjacent to a Planckian Locus within a predefined correlated color temperature range.

ff. LEDTRONICS, Inc. teaches the CIE Chromaticity diagrams from 1931 and 1976 which shows the relative luminance values for all LEDs operating at full

brightness levels plotted on a CIE Chromaticity diagram within McAdams ellipses that are on or adjacent to a Planckian Locus within a predefined correlated color temperature range.

gg. In regards to **claims 31-34**, LEDTRONICS, Inc. teaches the Color Temperature in Kelvin's from 1000°K - ∞°K. 1500°K -25000°K, 3000°K -10000°K, 4500°K -7500°K, 5500°K -6500°K are all optimum or workable ranges, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only ordinary skill in the art. *In re Aller*, 105 USPQ 233.

hh. Therefore it would have been obvious at the time the invention was made to use the array of LEDs of Muthu et al. within the visible spectrum as noted by Turnbull et al. in combination with the LEDs from LEDTRONICS, Inc. to illuminate an object because this would allow one to create white light from various LED colors.

10. **Claims 48-53** are rejected under 35 U.S.C. 103(a) as being unpatentable over Muthu et al. (US 6,441,558), Turnbull et al. (US 5,803,579), and Amerson et al. (US 6,379,022), as applied to claim 1 above, and further in view of Pearson Product Moment Correlation Coefficient

(http://web.archive.org/web/20020830202832/http://www.mnstate.edu/wasson/ed602pearsoncorr.htm).

ii. Muthu et al., Turnbull et al., and Amerson et al. teach all the limitations as disclosed above.

jj. Muthu et al., Turnbull et al., and Amerson et al. do not teach using as specific correlation coefficient.

kk. However, Applicant admits, "New claims 48-53 are directed to statistical correlations...The correlation coefficient, also known as the "Pearson product-moment correlation coefficient", is a well known parameter to those of ordinary skill in the art at or before the priority date of the present application" in the Amendment submitted 6/21/2007 on page 27 under the heading New Claims 48-53.

ll. The Pearson Product Moment Correlation Coefficient is a well-known parameter to those of ordinary skill before the priority date of the present application and is therefore considered prior art as shown by Pearson Product Moment Correlation Coefficient (http://web.archive.org/web/20020830202832/http://www.mnstate.edu/wasson/ed602pearsoncorr.htm).

mm. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have a correlation coefficient between a spectral power distribution of the LED array and a spectral power distribution of midday sunlight being at least .75, .80, .85, .90, or .95 over the visual spectrum, since it

has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

Applicant's arguments filed 6/21/2007 have been fully considered but they are not persuasive.

11. Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Regarding the Turnbull et al. reference, applicants argues that Turnbull et al teaches away from using 5 or more narrowband colored LEDs, however, applicant is reminded that Turnbull et al. was cited merely for its disclosure of the claimed visible light range.

Regarding the Examiner's rejection of claims 2-34, the applicant present no arguments, except stating that such claims depend directly or indirectly from independent claim 1 and would be allowable when/if the independent claim is allowed.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danielle Dunn whose telephone number is 571-270-3039. The examiner can normally be reached on M-F 7:30-5:00 with alternate Friday's off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on 571-272-2378. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DND
7/23/07

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